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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,721	10/15/2003	Frank J. Vaccaro	917-001US	5388

22897 7590 11/01/2006

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EXAMINER	
ECHELMEYER, ALIX ELIZABETH	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	**Application No.** 10/685,721	**Applicant(s)** VACCARO ET AL.	
	Examiner Alix Elizabeth Echelmeyer	**Art Unit** 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2006*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.
4a) Of the above claim(s) *13-20* is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-12* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *10-15-03*.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-12 in the reply filed on August 25, 2006 is acknowledged. The traversal is on the ground(s) that the two inventions are not different and the search would not be a burden on the examiner. This is not found persuasive because the examiner improperly classified Invention I in class 429 subclass 122 when it is properly classified in class 29 subclass 623.1. Further, the claims are drawn to inventions that are not coextensive in scope. The invention of the second group is to a valve regulated lead acid (VRLA) battery while the method makes no mention of this form of battery.

2. Applicants further traverse the species election. This traversal is moot since the claims in question are withdrawn at this point in prosecution. Nonetheless, Applicants have offered no evidence that the species are coextensive in scope or obvious variants.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The acronym AGM does not particularly point out

what kind of separator is being claimed. For the purposes of examination, the examiner will interpret AGM to stand for absorbent glass mat.

5. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear to the examiner what the desired value of the specific gravity is. It is also unclear how the specific gravity is a function of the voltage.

6. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "rapidly" is a relative term.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 2, 4, 5, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishimoto et al. in view of Ferreira et al. (US Pre-Grant Publication 2005/0042512) and Applicants' Admission of Prior Art.

Kishimoto et al. teach a process for producing a lead-acid battery. The process involves pouring an electrolyte comprising a sulfuric acid electrolyte and a viscosity-increasing agent into a separator made of glass fibers that is sandwiched between two electrode plates. A second electrolyte with a higher concentration of viscosity-increasing agent is added (column 2 lines 65-68; column 3 lines 1-11).

Kishimoto et al. teach that the sulfuric acid electrolyte may contain 3.0% by weight of silica in the first pour (column 4 lines 23-35).

Regarding claims 1 and 11, Kishimoto et al. fail to teach a particle size for the silica.

Ferreira et al. teach the use of colloidal silica having a particle size of 5-50 nm ([0017]).

It would be desirable to use colloidal silica having particles of 5-50nm as taught by Ferreira et al. in the battery of Kishimoto et al. since the use of colloidal silica prevents the agglomeration of silica particles, which causes instability of the battery (Ferreira et al. [0015]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use colloidal silica having particles of 5-50nm as taught by Ferreira et al. in the battery of Kishimoto et al. since the use of colloidal silica prevents the agglomeration of silica particles.

With further regard to claim 1, Kishimoto et al. fail to disclose forming the plates by applying current after contacting the first silica-electrolyte mixture with the plates and the AGM separator.

As stated by Applicants on page 11 of the instant specification:

> [0048] Current is applied to the plates to carry out the "formation" process in accordance with operation 204. This process is well known in the art and conducted in the usual fashion. As is known in the art, formation can be carried out as a step function of the applied current to prevent excessive internal heating. Alternatively, formation can be conducted with the battery in a water bath to control the temperature increase.

Applicants' Admission of prior art teaches that it is well known in the art to form the plates after contacting the plates with electrolyte in a lead acid battery.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the plates by applying current thereto after contacting the plates with the electrolyte mixture in order to recharge the lead acid battery. Furthermore, the silica-electrolyte mixture inherently gels after current is applied during the formation process.

As for claims 4 and 5, Kishimoto et al. teach that a second mixture of silica and electrolyte is added to the battery but fail to teach the amount of silica in the mixture that is claimed in the instant application.

Regarding claim 5, Kishimoto et al. teach that the first pour of electrolyte should take up 90% of the pore volume of the separator (column 4 lines 24-26). This is unsubstantially different from the claimed range of 96-97% of the first pour. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

Ferreira et al. teach a lead acid battery with gelled electrolyte (abstract). Ferreira et al. further teach that the electrolyte should contain 10 weight% silica when it is poured into the battery ([0028]).

Ferreira et al. teach that this concentration of silica is desirable since, once the sulfuric acid electrolyte is absorbed into the separator, the concentration of silica present will cause the electrolyte to form a gel ([0028]).

It would be desirable to use the concentration of silica as taught by Ferreira et al. in the battery of Kishimoto et al. in order to ensure that the electrolyte would form a gel.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the concentration of silica as taught by Ferreira et al. in the battery of Kishimoto et al. in order to ensure that the electrolyte would form a gel.

9. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishimoto et al. in view of Varma (US Patent 4,317,872) and Ferreira et al.

The teachings of Kishimoto et al. and Ferreira et al. as discussed above are incorporated herein.

Kishimoto et al. teach that a second mixture of silica and electrolyte is added to the battery but fail to teach that the silica is colloidal or the amount of silica in the mixture that is claimed in the instant application.

With regard to claim 9, Kishimoto et al. teach that the first pour of electrolyte should take up 90% of the pore volume of the separator (column 4 lines 24-26). This is unsubstantially different from the claimed range of 96-97% of the first pour. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

Regarding the use of colloidal silica, Varma teaches the use of colloidal silica in the electrolyte of a lead acid battery (abstract; column 5 lines 5-6).

Regarding claim 7, Varma teaches that the electrolyte containing colloidal silica and sulfuric acid has a specific gravity of 1.20 to 1.39, covering the range of the claimed invention (column 4 lines 56-59).

Varma further teach that the colloidal form of silica aids in repelling the silica particles from each other, which facilitates the gel formation of the electrolyte (column 4 lines 60-68).

It would be desirable to use the colloidal silica as taught by Varma in the battery of Kishimoto et al. in order to facilitate the gel formation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the colloidal silica as taught by Varma in the battery of Kishimoto et al. in order to facilitate the gel formation.

Kishimoto et al. further fail to teach the desired amount of silica in the second pour and the specific gravity of the electrolyte.

Ferreira et al. teach a lead acid battery with gelled electrolyte (abstract). Ferreira et al. further teach that the electrolyte should contain 10 weight% silica when it is poured into the battery ([0028]).

Ferreira et al. teach that this concentration of silica is desirable since, once the sulfuric acid electrolyte is absorbed into the separator, the concentration of silica present will cause the electrolyte to form a gel ([0028]).

Regarding claim 8, Ferreira et al. teach that electrolytes having silica in the claimed amount have a specific gravity in the range required by claim 8 (Figure 5).

It would be desirable to use the concentration of silica as taught by Ferreira et al. in the battery of Kishimoto et al. in order to ensure that the electrolyte would form a gel.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the concentration of silica as taught by Ferreira et al. in the battery of Kishimoto et al. in order to ensure that the electrolyte would form a gel.

With regard to claim 10, Kishimoto et al. fail to teach the formation of the plates at sub-atmospheric pressure.

Ferreira et al. teach the formation of the electrode plates at a pressure of 10 kPa since this helps the plates to retain their corrugated form ([0090]).

It would be advantages to form the plates of Kishimoto et al. at the pressure taught by Ferreira et al. in order to maintain the corrugated form.

Therefore, it would have been obvious to one having ordinary skill in the art to form the plates of Kishimoto et al. at the pressure taught by Ferreira et al. in order to maintain the corrugated form.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SUSY TSANG-FOSTER
PRIMARY EXAMINER

Alix Elizabeth Echelmeyer
Examiner